

## **REMARKS**

Claims 1-14, 16-21, 23-25, and 27-54 are now pending in the application. Claims 43-54 are new. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

Applicants' representatives thank the Examiner for the courtesies extended during the telephone interview of March 13, 2007, with participants Michael P. Doerr for Applicants and Examiner Dwin M. Craig. The rejection of claim 1 under 35 U.S.C. § 102(e), the Rossi et al. (U.S. Pat. No. 6,701,725) reference, and the rejection under 35 U.S.C. § 101 were discussed. The general thrust of the principal arguments of Applicants included that the cited art fails to teach or suggest selecting a flow control device based on an output of a model of a cooling system and that the cited art fails to teach or suggest inputting geometry information for the refrigeration system components. An agreement was not reached. In response to the Interview Summary mailed March 20, 2007, and the Examiner's statement that "The Examiner told the Applicant that he did not have negotiation authority", Applicants respectfully submit that, Applicants did not request the Examiner to enter into negotiations.

## **SPECIFICATION**

The abstract stands objected to for certain informalities with respect to the phrase "said cooling system." Applicants have amended the abstract accordingly to "the cooling system." Therefore, reconsideration and withdrawal of the objection are respectfully requested.

### **REJECTION UNDER 35 U.S.C. § 101**

Claims 26-42 stand rejected under 35 U.S.C. § 101, as being directed to non-statutory subject matter. This rejection is rendered moot by cancellation. Further, Applicants note that new claim 49, which recites generating an output based on said processing, is directed to statutory subject matter in that it includes a useful, concrete and tangible result. Therefore, reconsideration and withdrawal of the rejection are respectfully requested.

### **REJECTION UNDER 35 U.S.C. § 102**

Claims 1, 2, 3, 5, 6, 11 and 13 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Rossi et al. (U.S. Pat. No. 6,701,725). This rejection is respectfully traversed.

Claim 1 recites a method of computer-based simulation of a cooling system. The method includes inputting condenser parameters, evaporator parameters and compressor parameters for the cooling system, processing the condenser parameters, the evaporator parameters and the compressor parameters through a model of the cooling system, and selecting a flow control device based on an output of the model. Rossi et al. fails to teach or suggest the method of claim 1.

In Rossi et al., a standard for desired performance of a refrigeration system is set. Rossi et al. Col. 10, Lines 4-5. An efficiency index is then calculated based on current actual operating conditions, such as pressure and temperature measurements. Rossi et al., Figure 2, Col. 1 Lines 14-20, and Col. 2 Lines 41-43. Current efficiency is then compared with the standard to estimate efficiency degradation and improvement

after servicing and to determine whether a compressor is performing within specification. Rossi et al., Col. 5, Lines 19-25.

Rossi et al. fails to teach or suggest inputting condenser parameters, evaporator parameters and compressor parameters, processing the parameters through a model of the cooling system, and selecting a flow control device based on an output of the model. As supported by the specification, a flow control device may be selected based on simulation results. *See Specification [0107]* (“the cooling system design simulator enables the user to view flow control device sizing based on the simulation results.”) Rossi et al. is silent as to selecting a flow control device based on an output of a model.

Applicants note that the Examiner cites portions of Rossi et al. that reference the use of flow control devices. *See Office Action of 12/14/2006, p. 4, citing Rossi et al., Figure 1 # 14, Col. 4 Lines 10-28, and Col. 4 Lines 51-56.* Applicants respectfully submit that while Rossi et al. describes refrigeration systems that include flow control devices, it fails to teach or suggest *selecting* a flow control device *based on an output of a model*. Thus, while Rossi et al. discusses the use of different types of flow control devices (See e.g., Col. 4 Lines 10-28), it does not in any way teach selecting a particular flow control device based on an output of a model. Rather, the purposes of the Rossi et al. method of estimation include estimating efficiency degradation and improvement in efficiency after servicing “e.g. cleaning heat exchangers.” Rossi et al. Col. 5 Lines 11-15 and 19-24.

With respect to claims 2, 3, 5, 6, 11, and 13, Applicants note that each either directly or indirectly depends from claim 1. Therefore, claims 2, 3, 5, 6, 11, and 13 also

define over the prior art, and reconsideration and withdrawal of the rejections are respectfully requested.

Claims 15, 17, 18, 19, 20, 23 and 24 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Rossi (U.S. Pat. No. 6,701,725). The rejection is rendered moot by cancellation.

### **REJECTION UNDER 35 U.S.C. § 103**

Claims 8, 9, and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Rossi (U.S. Pat. No. 6,701,725) in view of Kagawa (U.S. Pat. No. 5,687,094). This rejection is respectfully traversed.

Claims 8, 9, and 10 each depend from claim 1, which defines over the prior art as discussed above. For at least the above reasons, claims 8, 9, and 10 also define over the prior art, and reconsideration and withdrawal of the rejections are respectfully requested.

Claims 26-31, 33, 34, 37-49 and 41 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Rossi (U.S. Pat. No. 6,701,725) in view of Singh (U.S. Pat. No. 6,990,821). The rejection is rendered moot by cancellation.

Claim 36 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Rossi (U.S. Pat. No. 6,701,725) in view of Singh (U.S. Pat. No. 6,990,821) and in view of Kagawa (U.S. Pat. No. 5,687,094). The rejection is rendered moot by cancellation.

Claims 12 and 25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable in view of Rossi (U.S. Pat. No. 6,701,725). Claim 12 depends from claim 1, which defines over the prior art as discussed above. For at least the above reasons, claim 12

also defines over the prior art, and reconsideration and withdrawal of the rejection are respectfully requested. With respect to claim 25, the rejection is rendered moot by cancellation.

Claims 4, 7, 14, 16 and 21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Rossi (U.S. Pat. No. 6,701,725) in view of Pray (U.S. Pat. No. 4,885,694). Claims 4, 7, and 14 depend either directly or indirectly from claim 1, which defines over the prior art as discussed above. For at least the above reasons, claims 4, 7, and 14 also define over the prior art, and reconsideration and withdrawal of the rejections are respectfully requested. With respect to claims 16 and 21, the rejections are rendered moot by cancellation.

Claims 32, 35 and 42 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Rossi (U.S. Pat. No. 6,701,725) in view of Singh (U.S. Pat. No. 6,990,821) and further in view of Pray (U.S. Pat. No. 4,885,694). The rejection is rendered moot by cancellation.

Claim 40 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Rossi (U.S. Pat. No. 6,701,725) in view of Singh (U.S. Pat. No. 6,990,821). The rejection is rendered moot by cancellation.

#### **NEW CLAIMS**

Claim 43 recites a method of computer-based simulation of a cooling system. The method includes inputting condensing unit parameters and evaporator parameters for the cooling system. At least one of the condensing unit parameters and the evaporator parameters includes configuration information for a heat exchanger of the

cooling system. The method also includes inputting compressor parameters for the cooling system and inputting refrigerant properties for a refrigerant flowing through the cooling system. The method also includes processing the condensing unit parameters, the evaporator parameters, the compressor parameters and the refrigerant properties through a model of the cooling system and generating system outputs based on the processing. Support for the method appears throughout the specification, including paragraphs [0067], [0073] to [0080], and [0095] to [0096].

The prior art fails to teach or suggest the method recited by claim 43. For example, with respect to Rossi et al., efficiency estimations are made based on compressor information and based on system measurements, such as liquid line pressure, suction line pressure, suction line temperature, and liquid line temperature. Rossi et al., Col. 2, Lines 41-43. Rossi et al. is silent, however, as to inputting condensing unit parameters and evaporator parameters including configuration information for a heat exchanger of a cooling system. Because Rossi et al. is directed to simply establishing a set standard for performance of a known system (Col. 10, Lines 4-5), and then evaluating subsequent performance as compared with the standard, the Rossi et al. estimations are based on system temperatures and pressures – configuration information for a heat exchanger is not inputted and not part of the Rossi et al. estimation.

Applicants note that claims 16-21, 23-25, and 44-48 depend directly or indirectly from claim 43 which defines over the prior art as discussed above. For at least the above reasons, claims 16-21, 23-25, and 44-48 also define over the prior art.

Claim 49 recites a method of computer-based simulation of a cooling system. The method includes inputting condenser parameters and evaporator parameters for the cooling system. At least one of the condenser parameters and the evaporator parameters include configuration information for a heat exchanger of the cooling system. The method also includes inputting compressor parameters for the cooling system, calculating air properties based on a dry bulb temperature, automatically inputting the air properties into a model of the cooling system, processing the condenser parameters, the evaporator parameters and the compressor parameters through the model, and generating an output based on the processing.

As noted above with respect to claim 43, Rossi et al. is silent at least as to inputting condenser parameters and evaporator parameters including configuration information for a heat exchangers of a cooling system. Thus, Rossi et al. fails to teach or suggest the method recited by claim 49.

Applicants note that claims 27-42 and 50-54 depend directly or indirectly from claim 49 which defines over the prior art as discussed above. For at least the above reasons, claims 27-42 and 50-54 also define over the prior art.

**CONCLUSION**

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

Dated: 4/16/07

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